

RESULT OF PLUM GROWTH DEVELOPMENT OF DIFFERENT PLUM VARIETIES IN ALTAI REGION

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ABSTRACT

Due to global warming and Mongolian climate change air temperature has increased by 1, 56 degree in last 60 years. 25 percent of desertification covers once in 2-3 years whereas more than 50 percent of desertification occurs once in 4-5 years in Mongolian territory. Dust storm increased 3-4 times in Gobi and step regions in comparison to 1960s (Desertification UB 2009).

Studying perennial trees, bushes and fruit tree cultivation, its adaptability and yield increasement is a stable way to reduce desertification, restore land degradation, increase yield and improve soil fertility.

Plum is easily adaptable plant to cultivate in any type of soil and climate of Mongolia.

Plum specificities are highly adaptable, yields in short period after planting, tolerant during winter, disease infected condition is comparably low, later uses of plum fruits are diverse and economically valuable.

Plum is also planted for medicinal and ornamental use. Increasing interests and demand on making home garden and to plant diverse of fruit trees are primary reason to conduct this study. Experiment was done in Khovd branch of Agricultural State University in fruit experimental station.

METHOD

Six varieties with three replications were planted in Randomized Complete Block Design and each replication had five trees. Varieties were Chemalskaya, Jeltaya hopti, Pamyat Putova, Alycha kolonovidnaya, Alycha MK-1, Alycha MK-2.

In this field experiment, Russian Fruit Research Institute, named after I.V.Lisavenko, breeding method for fruit study was used.

The objective was to study the plum growth development specificity, which are grown varieties in Altai region.

RESULTS AND DISCUSSION

Growth development stage of plum varieties at any plant's morphological stage depends on its organs and their functions.

Changing process occurs in external and internal organs of plum as other deciduous fruit trees. Plum growth stage starts from bud bursting followed by blooming, leaf formation, fruit setting and leaf falling.

We recorded the plum growth development stage every three days. Beginning of growth stage is

recorded when 15% of all plants starts bud bursting, stability is recorded at 75%.

A growth development stage of plums has differed depending on planting year climate. Bud bursting started from 26 April to 4 May and leaf falling occurred from 21 September to 10 October. Growing period of six varieties continued for about 161-170 days. First stage of growth development is when bud starts bursting.

Bud bursting of Chemalskaya, Jeltaya hopti, Pamyat Putova started from 26-27 April while Alycha varieties started bud bursting from 1 - 4 May. During bud bursting the air temperature was 12,2-15,5°C and 17,5 - 19,4°C for soil temperature. Sum of air temperature was 92,8-203,5 and it promoted bud bursting and next growing stage. Flowering period of plum varieties in Altay region started from 4 - 25 May. It continued 7-8 days for Chemalskaya, Jeltaya hopti, Pamyat Putova, 11 days for Alycha kolonovidnaya, 12 days for Alycha MK-1 and 13 days for Alycha

MK-2. Sum of air temperature, 151 – 235 degree positively influenced during flowering period. Flowering period was different among all varieties used for the study. Chemalskaya, Jeltaya hopti, Pamyat Putova varieties were considered as early flowering whereas Alycha kolonovidnaya, Alycha MK-1 and Alycha MK-2 were flowered later. Plum flowering period continues about 7-10 days depending on climate (S.P.Kuznetsov). It is the same as Mongolian plum flowering period.

Table 1

Year	Month and days	Negative parameters during plum flowering and seed setting				
		Windy days			Temperature	
		5-10 m/s	10-15 m/s	15-20 m/s	Air	Soil
2004	V/10-20	5	2		0	-1,6
	V/21-31	6	1	-	-	-
2005	V/10-20	9	-	-	-0,4	-3
	V/21-31	5	1	3	0,7	-3
2006	V/10-20	2	1	2	-1,7	-4
	V/21-31	4	1	2	-0,2	-4,0
2007	V/10-20	2	2	4	0	-5
	V/21-31	3	7	1	1	-2
2008	V/10-20	3	8	1	-1	-2,5
	V/21-31	2	6	2	1	-2,8

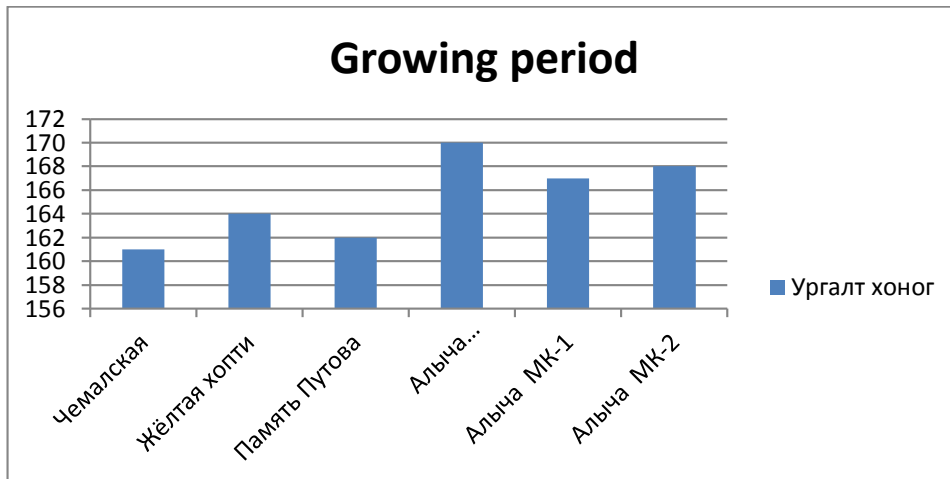
Plum and Alycha varieties are more resistant to spring frost than other seed fruits. During flowering period they resist -2°C degrees. Cold duration period was different at flowering and seed setting during the study years.

However, on May 15-16 2005, extreme coldness occurred and atmospheric temperature was 0-0,4°C degree, whereas soil temperature showed 1,5-3°C degree and wind speed was 9-12 m/sec but it had no negative influence on plum growth. From 10 to 20, May 2006, coldness continued for 3-4 days and on 8 May atmospheric temperature was -4,9 whereas soil temperature showed -10,9°C. At that time, it negatively affected to flowering and refining stages, and 35-38% of all flowers were frozen and demonstrated low fruit set.

Leaf formation and flowering of plum trees starts at the same time. Leaf is a growing organ of a plant. Three types of plum leaves were observed during the study. These are upper, mid and lower. Upper

leaves grow as leafy it protects plant buds. The Insects pollinate flowers. Mid leaves produces photosynthesis. Lower leaves grow on branch and also protect new branches. Branch growth continued from 9 June to 25 August which is for 71-73 days. Cells are divided for fertilization and fruit setting occurs in 18-30 days after pollination. Cell division is suspended later and cells are started to expand.

In other word, fruit starts growing and it continues until seed occurs inside the fruits. When seed starts occurring inside the fruits, fruit itself stopped growing. Fruits start growing until their maturity when the seeds stopped growing. Plum fruit matured in 68-72 days. Growth end is named when most of the leaves fall and their color change. In our study, leaf color became blush from 21 September to the beginning of October and then moved to dormancy.



Graph 1



Алыча Колонновидная Алыча МК 2



Алыча МК 1

Сорт Чемалская

**Сорт Жёлтая хопти****Сорт Память Путова****CONCLUSION**

1. Morphological study has indicated a growing period for Chemalskaya is 161, Jeltaya hopti was 162, Pamyat Putova 164, Alycha Kolonovidnaya 170, Alycha MK-1167 and Alycha MK-2168 days were respectively. As seen from the result of the study Jeltaya hopti and Chemalskaya varieties were considered as adapted, and Alycha MK-2 is promising variety.
2. The beauty of the plum tree can be used in urban green area. Besides these plum varieties, it is necessary to increase the number of ornamental plants of Mongolia and cultivate exotic ornamental trees, bushes and flowers.
3. Due to the increasing number of Ulaanbaatar population we are planning to enhance green area 2-3 times in coming years. For completing this plan, the result of our study will influence in a positive way.

REFERENCES

1. Дускабилов Т., Дускабилова Т.И. садоводство // Система ведения агропромышленного производства Республики Хакасия. –Абакан, 2002.-С.125-129
2. Дускабилов Т., Дускабилова Т.И. Генофонд косточковых культур юга Средней Сибири // Аграрная наука Хакасии: проблемы, пути их решения, перспективы: Сб.науч. Тр./РАСХН. Сиб. отд-ние. НИИАП Хакасии.-Абакан, 2003.-С.174-180.
3. Еремин Г.В., Витковский В.Л. Слива. – М.: Колос, 1980.-255с.
4. Saiikhanstesteg N. Результаты исследования хозяйственных и биологических косточковых плодов в Алтайском регионе Монголии * Аграрная наука сельскому хозяйству III Международная научно-практическая конференция Книга 1 Барнаул 2008 Стр 456-458
5. Saikhantsetseg N. Результаты сравнительного исследования хозяйственных биологических свойств в сортах сливы в Алтайском регионе МонголииАбакан 2010 стр 174.-179